

SAT Report
PMN Number: **P-13-0624**
SAT Date: **7/2/2013**
Print Date: **8/7/2014**

Related cases:

Concern levels:

Type of Concern:	<u>Health</u>	<u>Eco</u>	<u>Comments</u>
Level of Concern:	2	2	

<u>Persistence</u>	<u>Bioaccum</u>	<u>Toxicity</u>	<u>Comments</u>
1	1	1	

Exposure Based Review:

Health: No

Ecotox: No

Routes of exposure:

Health: Dermal Inhalation

Ecotox: All releases to water

Fate: ;

P2Rec Comments:

Comment: forward, will be used in place of HCl which reduces hazard to workers

Keywords:

Keywords: DEVEL, KIDNEY, IRR/CORROSION-S,E,MM,L

Summary of Assessment:

Fate:

Fate Summary: P-13-0624

FATE:

Liquid with MP < -20 C (M)

log Kow = -0.96 (E)

S = 500 g/L at 25 C (M)

VP = 4.5E-2 torr at 25 C (NOMO5)

BP = 238 C (M)
 H < 1.00E-8 (E)
 log Koc = 1.00 (E)
 log Fish BCF = 0.50 (E)
 log Fish BAF = -0.05 (E)
 POTW removal (%) = 90 via biodeg; OECD 306(Closed Btl Procedure): 53.3-57.9%/28d.
 Time for complete ultimate aerobic biodeg = wk
 Sorption to soils/sediments = low
 PBT Potential: P1B1
 *CEB FATE: Migration to ground water = moderate - rapid

Health:

Health Summary: Absorption is good all routes based on analogs. Expect rapid hydrolysis of the formate esters to give formic acid and diethylene glycol. The pH is given as 2.8. Therefore, there is concern for irritation/corrosion to all exposed tissues. Diethylene glycol causes kidney effects and developmental toxicity at high exposure levels. In a developmental toxicity study in rats [REDACTED], diethylene glycol caused fetal and maternal toxicity at 8 ml/kg with a NOEL of 1 ml/kg. Moderate concern.

Test Data: TOXICITY DATA, summary only, final reports not yet available:
 negative in the Ames assay
 acute inhalation study - no deaths at 5.05 mg/L
 corrosive to the skin

Ecotox:

Test Organism	Test Type	Test End Point	Predicted	Measured	Comments
fish	96-h	LC50	>100	422	SW
daphnid	48-h	LC50	>100	55.7	SW
green algal	96-h	EC50	>100	NAD	SW; NAD=No Adequate Data
fish	—	chronic value	>10	42.2	ACR
daphnid	—	chronic value	>10	5.57	ACR
algal	—	chronic value	>10	NAD	SW; NAD=No Adequate Data
Sewage Sludge	3-h	EC50	—		
Sewage Sludge	—	Chronic Value	—		

Ecotox Values Comments: Predictions are based on SARs for esters: SAR chemical class = ester; MW 162; log Kow = -0.96 (EPI); liquid; S = 500 g/L at 20 C (M); pH7; effective concentrations based on 100% active ingredients and nominal concentrations; hardness < 150.0 mg/L as CaCO3; and TOC <2.0 mg/L;

Ecotoxicity Test Data Results for P-13-0624: Ethanol, 2,2'-oxybis-,1,1'-diformate (CASRN: 120570-77-6; Trade name: N-FLOW 325; BDF-325).

Marine acute fish, invertebrates, and algae toxicity studies were completed for PMN P-13-0624 in 2003 by STL Runcorn for Halliburton Energy Services, LTD. The PMN material is described as a liquid in the neat form and as a solution of 10 - 23 % PMN material in processing. The molecular weight is 162.14 g/mol. Based on an experimental water solubility of 500 g/L, an estimated Log Kow of -0.96 and an estimated Henry's Law Constant of $< 1.00 \times 10^{-8}$ atm-m³/mole this PMN is expected to nonvolatile and highly soluble in water. The PMN material is used as a delayed acid generator that is used for the slow release of acid in oil or gas wells to break filter cakes. The PMN will be used in place of hydrochloric acid. The PMN system does not require special acid resistant tanks, pumps, and other equipment and can be safer for rig personnel than conventional mineral acid beakers. Based on this information, the PMN has the potential to be used in off-shore oil or gas wells, thus the marine toxicity studies represent a potential use of the PMN substance. Studies followed the respective guidelines of OECD 203 (Acute Toxicity for Fish), draft method ISO 14669:1999(E) (Water Quality - Determination of Acute Lethal Toxicity to Marine Copepods), PARCOM method 1995 (A sediment bioassay using an amphipod *Corophium* sp.) and ISO/DIS 10253 and were GLP compliant.

Fish Ecotoxicity Test:

STL Runcorn conducted a 96-hour acute toxicity test in juvenile turbot (*Scophthalmus maximus*) with P-13-0624 under semi-static conditions with 48-hour renewal. Turbot is not a standard test species for marine systems. This study was reported to follow PARCOM method 1995 and OECD test guideline 203 (1992). Single replicates of seven *S. maximus* were exposed to a dilution water control (artificial seawater) or the test substance at nominal test concentrations of 100.0, 177.8, 316.2, 562.3 and 1000.0 mg/L. Analytical monitoring was not conducted. Test solutions were prepared through the addition of test substance to artificial seawater. Over the course of testing, temperature ranged from 13.5 – 15.0 °C, pH ranged from 7.36 – 8.30, dissolved oxygen (% air saturation values) ranged from 83.3 – 99.2 % ASV and salinity ranged from 31.0 – 35.5 ‰. A loading of 1.08 g fish/L was calculated. No mortalities occurred at nominal concentrations ≤ 316.0 mg/L; 100% mortality was observed at concentrations ≥ 562.3 mg/L. Based on nominal concentrations, the 96-hour LC50 is 421.7 mg/L. This study was considered to be adequate.

96-hour LC50 = 422 mg/L

Invertebrate Ecotoxicity Test:

(1) STL Runcorn conducted a 48-hour acute toxicity test in marine copepods (*Acartia tonsa*) with P-13-0624 under static conditions. This study was reported to follow draft method ISO 14669:1999(E). An unspecified number of *A. tonsa* were exposed to a dilution water control (filtered seawater) or the test substance at nominal concentrations of 20.0, 35.6, 63.2, 112.5, 200.0 or 355.6 mg/L. Analytical monitoring was not conducted. A 1.0 g/L stock solution was prepared in seawater. Aliquots of this stock were used to achieve the appropriate range of

concentrations. Dissolved oxygen, pH and temperature values were determined in test media at the beginning and end of the study; however, no measurements were reported. Prior to the start of the study, the temperature was 14°C, the pH was 8.0, and the dissolved oxygen level was 92.8%. The % immobilization at 0, 20.0, 35.6, 63.2, 112.5, 200.0 and 355.6 mg/L was 10, 30, 40, 50, 100, 100 and 100%, respectively. The study report did not include details on the number of *A. tonsa* used, the number of replicates, dissolved oxygen, pH, temperature or salinity. In addition there was 10 % immobilization in the control. Despite the lack of details, the test was considered to be adequate for determining aquatic toxicity to marine invertebrates. Based on nominal concentrations, the 48-hour LC50 was 55.7 mg/L.
48-hour EC50 = 55.7 mg/L

(2) STL Runcorn conducted a 10-day acute toxicity test in sediment re-worker amphipods (*Corophium volutator*) with P-13-0624 under static conditions. This study was reported to follow PARCOM method 1995. Three replicates of twenty *C. volutator*, collected from the North Wales coast, were exposed to the test substance at nominal concentrations of 1000.0, 1778.3, 3162.3, 5623.4 or 10,000.0 mg/kg dry weight of sediment collected from the same site as the amphipods. Analytical monitoring was not conducted. Five replicates of twenty *C. volutator* were exposed to control sediment. Test concentrations were prepared by adding calculated amounts of test substance to vessels containing wet sediment and then mixing thoroughly with a clean spatula with 100 mL of seawater added to each vessel after mixing. Untreated controls were prepared in a similar way but without the addition of test material. Over the course of testing, temperature ranged from 13.0 – 15.0 °C, pH ranged from 6.63 – 8.58 and dissolved oxygen (% air saturation values) ranged from 76.1 – 99.9 % ASV. On day one, it was noted that some of the test vessels had dissolved oxygen values slightly below the recommended 85 % ASV; extra airlines were added to compensate and subsequent readings were acceptable. The % mortality at 0 (control), 1000.0, 1778.3, 3162.3, 5623.4 and 10000.0 mg/kg dry weight was 14, 15, 5, 28, 18 and 32 %, respectively. There was no clear evidence of a dose response in the study. Based on nominal concentrations, the 10-d LC50 is > 10000.0 mg/kg dry weight. This study was considered to be adequate.
10-day LC50 > 10,000.0 mg/kg dry weight of sediment

Algal Ecotoxicity Test:

STL Runcorn conducted a 72-hour acute toxicity test in marine algae (*Skeletonema costatum*) with P-13-0624 under static conditions. This study was reported to follow the procedure described in ISO/DIS 10253. Three replicates of *S. costatum* (10,000 cells/mL) were exposed to the test substance at nominal concentrations of 100.0, 177.8, 316.2, 562.3 and 1000.0 mg/L. Analytical monitoring was not conducted. Six control replicates were prepared from test media only (Guillard's f/2 medium + Si). The test substance was dissolved in seawater to create a 1.0 g/L stock solution, from which the nominal concentrations were prepared in test media. The controls were prepared as a bulk volume (700 mL), and 100 mL volumes were removed and added to the appropriately labeled vessels. The algae were incubated in a rotary incubator under constant illumination. Over the course of testing, temperature ranged from 20.0 – 21.5 °C, pH ranged from 3.81 – 8.65 and dissolved oxygen ranged from 86.6 – 94.6 % ASV. Mean cell

density in control cultures increased by a factor of 141 within 72 hours. Negative inhibition was observed at 100.0 and 177.8 mg/L after 48 hours. Greater than 100% inhibition was observed at 562.3 mg/L after 48 and 72 hours and 1000 mg/L for the duration of the study. The pH was noted to be below the minimum acceptable of 7.00 at 48 hours at 316.2 mg/L and at 562.3 and 1000 mg/L after 24, 48 and 72 hours exposure. This was thought to have been caused by an effect of the test chemical, because all pH values were adjusted to within limits at time 0 before inoculation. It cannot be determined if it was the lower pH in the test vessels that was the cause of the algal inhibition in this test. Based on nominal concentrations, the 72-hour EC50 for growth rate was 315.8 mg/L. The growth rate NOEC and LOEC values were < 100.0 mg/L and 100 mg/L, respectively. The study was not conducted at concentrations low enough for the calculation of chronic toxicity although it is known that the chronic value would be < 100 mg/L. The test was considered to be inadequate due to the extremely low and highly variable pH. It can not be determined if the reduction in growth rate was due to chemical toxicity or toxicity from the acidic conditions.

The 96-hour marine fish (LC50 = 421.7 mg/L), 48-hour marine aquatic invertebrate (EC50 = 55.7 mg/L) and 10-day marine sediment invertebrate (LC50 > 10,000 mg/kg dry weight of sediment) toxicity tests were adequate for P-13-0624. The 72-hour marine algae toxicity test for [REDACTED] was not adequate for P-13-0624. For comparative purposes, the 96-hour fish LC50 > 100 mg/L, the 48-hour daphnid LC50 > 100 mg/L, the 96-hour algae EC50 > 100 mg/L, and the fish, daphnid, and algae chronic values (ChV) > 10 mg/L, respectively were calculated using the esters QSAR in ECOSAR. Available experimental data indicate the marine copepod (aquatic invertebrate) to be the most sensitive species for calculating the acute and chronic concentrations of concern (CoC). The copepod is a suitable marine aquatic invertebrate to use in place of the freshwater daphnia for this PMN since there is potential use in a marine environment. Based on the experimental 48-hour marine aquatic invertebrate EC50 of 55.7 mg/L (55,700 ppb), and the application of an assessment factor of 5, the acute CoC for P-13-0624 is 11,140 ppb. The chronic value for P-13-0624 is calculated by dividing the daphnia EC50 of 55.7 mg/L by an acute to chronic ratio of 10 to yield a ChV of 5.57 mg/L (5570 ppb). The chronic CoC for P-13-0624 is then derived by dividing the ChV of 5.57 mg/L (5570 ppb) by a factor of 10 (uncertainty factor) yielding a chronic CoC of 557 ppb.

Acute CoC = 11,140 ppb

Chronic CoC = 557 ppb

Ecotox Study Reviewer: K. Eisenreich

July 8, 2013

Factors	Values	Comments
Assessment Factor	10	
Concentration of Concern (ppb)	557	
SARs	esters	
SAR Class	ester	

Ecotox Category	Esters
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Ecotox Factors Comments:

SAT Chair: Becky Jones

Focus Report
New Chemicals Program
PMN Number: **P-13-0624**

Focus Date: 07/17/2013 11:00:00 PM Report Status: Completed
Consolidated Set:
Focus Chair: Kristan Markey Contractor: Jean Quenneville

I. Notice Information

Submitter: Halliburton Energy Services CAS Number: 120570-77-6
Chemical Name: Ethanol, 2,2'-oxybis-, 1,1-diformate
Use: Delayed acid generator that is used for the slow release of acid in oil or gas wells to break filter cakes. The PMN material reacts with water under use conditions to generate formic acid which subsequently dissolves the calcium carbonate and cellulose in the filter cake removing fluid damage. P2 REC: CRSS: forward. P2 Claim: The formulation containing the PMN material will be used in place of hydrochloric acid (HCl). Compared to competitive breaker systems involving live acids, this system carries much less HSE risk. Files CA 156:509490, 153:314542, 153:314520, 151:554052 describe use of the PMN material as an acid generator for mining operations, especially for use in subterranean formations for acid fracturing, and for breaking oil based gels and filter cakes in drilling fluids.

Other Uses: Same as cas [REDACTED]
PV-Max: [REDACTED]
Manufacture: Import: X

II. SAT Results

(1) Health Rating: 2 Eco Rating: 2 Comments: ;

Occupational: 1-2B Non-Occupational: Environmental:

(1) PBT: 1 1 1 Comments:

III. OTHER FACTORS

Categories:

Health Chemical Category: Ecotox SAR and esters; Esters
Category:

Related Cases/Regulatory History:

Health related Cases: [REDACTED] (SAME COMPOUND)

Ecotox Related Cases: Same as [REDACTED]. Analogs: [REDACTED]

Regulatory History: [REDACTED]
(Same)-Focus drop
(Same)-WITHDRAWN/FACE 5E
-WITHDRAWN/FACE 5E
-FOCUS DROP
-FOCUS DROP

CRSS P2Rec: P2Rec-P2 Recognition; YX-Exposure-Based 5(e)

MSDS/Label Information:

MSDS: Yes Label: No
General Equipment: impervious gloves (PVC) / chemical goggles; also wear a face shield if splashing hazard exists / rubber apron / rubber boots / use in well ventilated area.
Respirator: Not normally necessary. If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.
Health Effects: May be harmful if swallowed. May cause eye and skin burns.

TLV/PEL (PMN or raw material): - none established.

Exposure Based Information:

Exposure Based Review: Y
Exposure Based Review (Eco): N
Exposure Based Review (Non Occupational):

Exposure Based Review (Health): N
Exposure Based (Occupational): No
Exposure Based (Environmental):

IV. Summary of SAT Assessment

Fate:

Fate Summary: P-13-0624
FATE:
Liquid with MP < -20 C (M)
log Kow = -0.96 (E)
S = 500 g/L at 25 C (M)
VP = 4.5E-2 torr at 25 C (NOMO5)
BP = 238 C (M)
H < 1.00E-8 (E)
log Koc = 1.00 (E)
log Fish BCF = 0.50 (E)
log Fish BAF = -0.05 (E)
POTW removal (%) = 90 via biodeg; OECD 306(Closed Btl Procedure): 53.3-57.9%/28d.
Time for complete ultimate aerobic biodeg = wk
Sorption to soils/sediments = low
PBT Potential: P1B1
*CEB FATE: Migration to ground water = moderate - rapid

Health:

Health Summary: Absorption is good all routes based on analogs. Expect rapid hydrolysis of the formate esters to give formic acid and diethylene glycol. The pH is given as 2.8. Therefore, there is concern for irritation/corrosion to all exposed tissues. Diethylene glycol causes kidney effects and developmental toxicity at high exposure levels. In a developmental toxicity study in rats [REDACTED], diethylene glycol caused fetal and maternal toxicity at 8 ml/kg with a NOEL of 1 ml/kg. Moderate concern.

Test Data: TOXICITY DATA, summary only, final reports not yet available:
negative in the Ames assay
acute inhalation study - no deaths at 5.05 mg/L
corrosive to the skin

Ecotox:

Ecotox Values:		
Fish 96-h LC50:	>100(P)	422(M)
Daphnid 48-h LC50:	>100(P)	55.7(M)
Green algal 96-h EC50:	>100(P)	NAD(M)
Fish Chronic Value:	>10(P)	42.2(M)
Daphnid ChV:	>10(P)	5.57(M)
Algal ChV:	>10(P)	NAD(M)

Ecotox values comments: Predictions are based on SARs for esters: SAR chemical class = ester; MW 162; log Kow = -0.96 (EPI); liquid; S = 500 g/L at 20 C (M); pH7; effective concentrations based on 100% active ingredients and nominal concentrations; hardness < 150.0 mg/L as CaCO3; and TOC <2.0 mg/L;

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weight is 162.14 g/mol. Based on an experimental water solubility of 500 g/L, an estimated Log Kow of -0.96 and an estimated Henry's Law Constant of $< 1.00 \times 10^{-8}$ atm-m³/mole this PMN is expected to nonvolatile and highly soluble in water. The PMN material is used as a delayed acid generator that is used for the slow release of acid in oil or gas wells to break filter cakes. The PMN will be used in place of hydrochloric acid. The PMN system does not require special acid resistant tanks, pumps, and other equipment and can be safer for rig personnel than conventional mineral acid beakers. Based on this information, the PMN has the potential to be used in off-shore oil or gas wells, thus the marine toxicity studies represent a potential use of the PMN substance. Studies followed the respective guidelines of OECD 203 (Acute Toxicity for Fish), draft method ISO 14669:1999(E) (Water Quality - Determination of Acute Lethal Toxicity to Marine Copepods), PARCOM method 1995 (A sediment bioassay using an amphipod *Corophium* sp.) and ISO/DIS 10253 and were GLP compliant.

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(2) STL Runcorn conducted a 10-day acute toxicity test in sediment re-worker amphipods (*Corophium volutator*) with P-13-0624 under static conditions. This study was reported to follow PARCOM method 1995. Three replicates of twenty *C. volutator*, collected from the North Wales coast, were exposed to the test substance at nominal concentrations of 1000.0, 1778.3, 3162.3, 5623.4 or 10,000.0 mg/kg dry weight of sediment collected from the same site as the amphipods. Analytical monitoring was not conducted. Five replicates of twenty *C. volutator* were exposed to control sediment. Test concentrations were prepared by adding calculated amounts of test substance to vessels containing wet sediment and then mixing thoroughly with a clean spatula with 100 mL of seawater added to each vessel after mixing. Untreated controls were prepared in a similar way but without the addition of test material. Over the course of testing, temperature ranged from 13.0 – 15.0 °C, pH ranged from 6.63 – 8.58 and dissolved oxygen (% air saturation values) ranged from 76.1 – 99.9 % ASV. On day one, it was noted that some of the test vessels

had dissolved oxygen values slightly below the recommended 85 % ASV; extra airlines were added to compensate and subsequent readings were acceptable. The % mortality at 0 (control), 1000.0, 1778.3, 3162.3, 5623.4 and 10000.0 mg/kg dry weight was 14, 15, 5, 28, 18 and 32 %, respectively. There was no clear evidence of a dose response in the study. Based on nominal concentrations, the 10-d LC50 is > 10000.0 mg/kg dry weight. This study was considered to be adequate.

10-day LC50 > 10,000.0 mg/kg dry weight of sediment

Algal Ecotoxicity Test:

STL Runcorn conducted a 72-hour acute toxicity test in marine algae (*Skeletonema costatum*) with P-13-0624 under static conditions. This study was reported to follow the procedure described in ISO/DIS 10253. Three replicates of *S. costatum* (10,000 cells/mL) were exposed to the test substance at nominal concentrations of 100.0, 177.8, 316.2, 562.3 and 1000.0 mg/L. Analytical monitoring was not conducted. Six control replicates were prepared from test media only (Guillard's f/2 medium + Si). The test substance was dissolved in seawater to create a 1.0 g/L stock solution, from which the nominal concentrations were prepared in test media. The controls were prepared as a bulk volume (700 mL), and 100 mL volumes were removed and added to the appropriately labeled vessels. The algae were incubated in a rotary incubator under constant illumination. Over the course of testing, temperature ranged from 20.0 – 21.5 °C, pH ranged from 3.81 – 8.65 and dissolved oxygen ranged from 86.6 – 94.6 % ASV. Mean cell density in control cultures increased by a factor of 141 within 72 hours. Negative inhibition was observed at 100.0 and 177.8 mg/L after 48 hours. Greater than 100% inhibition was observed at 562.3 mg/L after 48 and 72 hours and 1000 mg/L for the duration of the study. The pH was noted to be below the minimum acceptable of 7.00 at 48 hours at 316.2 mg/L and at 562.3 and 1000 mg/L after 24, 48 and 72 hours exposure. This was thought to have been caused by an effect of the test chemical, because all pH values were adjusted to within limits at time 0 before inoculation. It cannot be determined if it was the lower pH in the test vessels that was the cause of the algal inhibition in this test. Based on nominal concentrations, the 72-hour EC50 for growth rate was 315.8 mg/L. The growth rate NOEC and LOEC values were < 100.0 mg/L and 100 mg/L, respectively. The study was not conducted at concentrations low enough for the calculation of chronic toxicity although it is known that the chronic value would be < 100 mg/L. The test was considered to be inadequate due to the extremely low and highly variable pH. It can not be determined if the reduction in growth rate was due to chemical toxicity or toxicity from the acidic conditions.

The 96-hour marine fish (LC50 = 421.7 mg/L), 48-hour marine aquatic invertebrate (EC50 = 55.7 mg/L) and 10-day marine sediment invertebrate (LC50 > 10,000 mg/kg dry weight of sediment) toxicity tests were adequate for P-13-0624. The 72-hour marine algae toxicity test for [REDACTED] was not adequate for P-13-0624. For comparative purposes, the 96-hour fish LC50 > 100 mg/L, the 48-hour daphnid LC50 > 100 mg/L, the 96-hour algae EC50 > 100 mg/L, and the fish, daphnid, and algae chronic values (ChV) > 10 mg/L, respectively were calculated using the esters QSAR in ECOSAR. Available experimental data indicate the marine copepod (aquatic invertebrate) to be the most sensitive species for calculating the acute and chronic concentrations of concern (CoC). The copepod is a suitable marine aquatic invertebrate to use in place of the freshwater daphnia for this PMN since there is potential use in a marine environment. Based on the experimental 48-hour marine aquatic invertebrate EC50 of 55.7 mg/L (55,700 ppb), and the application of an assessment factor of 5, the acute CoC for P-13-0624 is 11,140 ppb. The chronic value for P-13-0624 is calculated by dividing the daphnia EC50 of 55.7 mg/L by an acute to chronic ratio of 10 to yield a ChV of 5.57 mg/L (5570 ppb). The chronic CoC for P-13-0624 is then derived by dividing the ChV of 5.57 mg/L (5570 ppb) by a factor of 10 (uncertainty factor) yielding a chronic CoC of 557 ppb.

Acute CoC = 11,140 ppb

Chronic CoC = 557 ppb

Ecotox Study Reviewer: K. Eisenreich

July 8, 2013

Ecotox Factors:

Assessment Factor: 10
Concern Concentration: 557
- Chronic Value

V. Summary of Exposures/Releases

Engineering Summary: P-13-0624

Exposures/Releases	Release	Exposure	Exposure
Scenario	Use: Oil and Gas Well Additive	Use: Oil and Gas Well Additive	Use: Oil and Gas Well Additive
Sites			
Media			
Descriptor A	Typical	High End	Worst Case
Quantity A (Release = kg/site/day; Exposure = mg/day)			
Frequency A (day/year)			
Descriptor B	Worst Case		Typical
Quantity B (Release = kg/site/day; Exposure = mg/day)			
Frequency B (day/year)			
From			
Workers			
Exposure Type			

VI. Focus Decision and Rationale

Regulatory Actions

Regulatory Decision: PMN Drop with P2 Letter

Decision Date: 07/17/2013

Type of Decision:

Rationale:

P-13-0624 was dropped from further review and the P2rec was forwarded. Absorption is good all routes based on analogs. Human health hazard concerns were low-moderate for dermal and inhalation exposures. Potential risks to workers were mitigated by appropriate PPE. Ecotoxicity hazard concerns were moderate based on acceptable submitted test data. Potential risks to the environment were low due to no releases to water. No CEB or EAB exposure-based criteria were met. This was an EAB drop.

COC: Chronic – 557 ppb, Acute – 11,140 ppb

Summary of Exposures and Releases

Use

[REDACTED]

[REDACTED]

P2 Rec Comments:

Testing:

Final Recommended:

Health:

Eco:

Fate:

Other: